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AUTHOR Jayawardena, Lal
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ABSTRACT

This presentation reviews the key dimensions of the environment problem and estimates the probable costs of arresting future environmental damage by expenditures to be undertaken in support of sustainable development during the decade of the 90s. It deals with the problem of pursuing a minimum "socially necessary" growth rate in the world economy required to meet the key aspirations of today's generation by the year 2000. It argues that the opportunities presented by the current international situation involving detente between the superpowers will enable the developed countries to transfer to developing countries the resources needed to supplement domestic efforts for bringing about growth. It also argues that there will be enough resources left over, after providing for growth, to address the key dimensions of the global environment problem in both developing and developed countries by expenditures to be made during the 1990s, so that sustainable development can be ensured for the 21st century and beyond. Environmental problems considered include global warming, deforestation, land degradation, and the pressure of population growth on environmental resources. The argument is supported by projections of resource requirements. An annex to the paper contains an extract from a statement by Thorvald Stoltenberg concerning a system of development contracts. (JDD)

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The mission of the university in economic development and environmental preservation : management of local and regional resources in an interdependent world system

Lalith E. Jayawardena, Director, WIDER/UNU

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Ninth General Conference

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Parallel Commission III

The Mission of the University in Economic Development and Environmental Preservation: Management of Local and Regional Resources in an Interdependent World System

by

Lal Jayawardena
Director, WIDER

World Institute for Development Economics Research,
of the
United Nations University

WIDER

UNU

1. INTRODUCTION

The topic assigned to me raises straightaway the issue of the potential conflict between the claims of economic development and environmental preservation. Economic development is largely - though by no means entirely - about achieving higher rates of economic growth which are in some sense socially necessary if key goals and aspirations of humanity, and specifically of the present generation, are to be met. My concentration on economic growth is not because economic growth defines economic development but because economic development cannot be defined without growth. Most recently, for example, the Declaration adopted by the Eighteenth Special Session of the United Nations on International Economic Co-operation proclaimed "the strong commitment" of member states "to the revitalization of economic growth and development of the developing countries so as to realize the basic right of all human beings to a life free from hunger, poverty ignorance, disease and fear".[1] Given the interdependencies between countries in the world economy, accelerated growth in the developing countries implies accelerated growth in the developed countries, certainly over the medium term. In the World Bank's most recent World Development Report for 1990,[2] for example, an annual rate of growth in the industrial countries of Gross Domestic Product (GDP) during the nineties at about 3% a year - the historical trend - is associated with a growth rate for developing countries as a whole of 5.1% representing both a significant improvement on their 1989 performance of 3.3% and their 1980-89 average performance of 4.3%.

On the other hand, accelerated economic growth has always been conceived of as being constrained by environmental considerations. The early discussions of

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[1] United Nations *Report of the Ad Hoc Committee of the 18th Special Session*, April 1990. page 5.

[2] World Bank, *World Development Report 1990*, page 16 table 1.3.

environmental issues were concerned with the environment as a source of physical inputs into the productive system, and with the limits posed by natural resource scarcities on the capacity of the system to grow fast enough.[3] Today we are concerned with other aspects of the environment as well, which are especially relevant to the wellbeing of future generations: with its capacity to absorb the waste products of society generated by rapid growth through the air, soil, and water; and with its many other uses such as its life-support system through the atmosphere, ozone layer, the diversity of species and amenity and health values.

It was precisely the attempt to reconcile the conflicting claims of rapid economic growth and preservation of the environment that led the Brundtland Commission[4] to evolve the concept of "sustainable development". The question that they grappled with was whether there was any way to meet the needs and aspirations of today's world population of 5 billion without compromising the ability of tomorrow's 8 to 10 billion to meet theirs. The answer they arrived at was that sustainable development in the sense of reconciling today's needs with those of tomorrow was indeed possible, provided that fundamental changes were made in the way in which nations managed today's world economy. Over the longer term, for instance, environmental preservation may necessitate loosening the linkages between growth in the North and growth in the South to accommodate the possibility of a global ceiling to growth within which the conflicting claims of North and South could be reconciled. In fact, Professor Robert Dorfman of Harvard University, and a WIDER McDonnell Scholar last summer, has recently suggested a conceptual framework for approaching the problem.[5]

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[3] E.g. Club of Rome, *Limits to Growth*, Universe Publishing Co., United Kingdom 1974.

[4] World Commission on Environment and Development: *Our Common Future*, Oxford University Press, 1987.

[5] Robert Dorfman, *Protecting the Global Environment; An Immodest Proposal*, (mimeo), WIDER Helsinki 1989. Specifically this framework would seek answers to three sorts of questions. The first deals with the relationship between a country's growth rate and its invasions of the environment

My focus today will be somewhat narrower. I propose first to review the key dimensions of the environment problem, *e.g.* global warming, and estimate the probable costs of arresting future environmental damage by expenditures to be undertaken in support of sustainable development during the decade of the 90s. These costs fall naturally into two regional categories: those to be incurred *in* developing countries - though not necessarily *borne by* them - for which the policy initiatives will nonetheless lie with them, and those to be incurred in and borne by developed countries. Secondly, I will deal with the principal dimension of the world's economic problem, namely that of pursuing a minimum "socially necessary" growth rate in the world economy required to meet the key aspirations of today's generation by the year 2000. I will argue, thirdly, that the opportunities presented by the current international situation involving détente between the superpowers, will enable the developed countries to transfer to developing countries the resources needed to supplement domestic efforts for bringing about socially necessary growth. I will argue, finally, that there will be enough resources left over, after providing for socially necessary growth, to address the key dimensions of the global environment problem in both developing and developed countries by expenditures to be made

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*i.e.*its discharges of fluorocarbons, CO_2, sulphur oxides, heavy metals, and so on. The relationship between economic activity and polluting emissions has already been extensively investigated under UN auspices by Professor Wassily Leontief (*The Future of the World Economy, A United Nations Study*, New York: Oxford University Press, 1977) and what is involved is an updating of this work. Given a definitive relationship between economic activity and pollution, it should be easy to derive global growth ceilings appropriate to any specified level of pollution as a basis for rationing out the available room between developing and developed countries in the course of subsequent negotiations.

Before determining a global growth ceiling which is damaging to *human beings* however, the remaining two questions need to be answered. The second sort of question is physical and would investigate the relation between the world's discharges of harmful substances and the consequent state of environmental media particularly the atmosphere and the oceans. Although these questions have been widely studied and many uncertainties remain, a great deal is known about the answers. The third sort of question is predominantly biological. It deals with the relationship between the state of the environmental media and the health of *human beings* and other species of sauna and flora. This framework, therefore, establishes a link between economic growth and environmental damage to *human beings* which should enable limits to be set to sustainable growth globally and help determine a system of incentives and penalties for individual nation states which would permit the world to live within these limits.

during the decade of the 90s, so that sustainable development can be ensured for the 21st century and beyond.

The line of argument summarised above will be supported by projections of resource requirements which take as their base the present year 1990 which is already half over. This merely underlines the urgency of the action required of the world community which still has to focus adequately on an issue concerning which a great deal is already known. I propose to draw *inter alia* on the results of WIDER research in addressing this issue. WIDER has in hand a comprehensive work programme on the environment and emerging development issues where the research advisers to the programme are Professor Partha Dasgupta of Stanford University and Professor Karl-Göran Mäler of the Stockholm School of Economics. The results of ongoing research in this programme will be presented at a WIDER Conference next month, one aim of which, is to define in a precise and formal way, the concept of sustainable development that is compatible with environmental protection. This Conference which will be attended by a large number of distinguished scholars will also attempt to evolve proposals for remedial action which would be presented to the UN Conference on Environment and Development in 1992. My focus today concerns only one aspect of the numerous issues that will be discussed in Helsinki in September.

Let me begin with the key areas in which the environment appears to be threatened; global warming, deforestation, land degradation, and the pressures of population growth on environmental resources. As regards global warming, it is believed by scientists specialising in this phenomenon that the increase in global temperature (the average is now 0.6^{o}C warmer than a century ago) is due to the emission of various gases into the atmosphere as a result of the great expansion in the use of fossil-based energy, both in industrial processes and in transportation, principally automobiles. For example, carbon dioxide (CO_2) in the atmosphere is

now 25% higher than pre-industrial levels, nitrous oxide 19%, and methane 100%. In 1987, global carbon emissions from fossil fuels are estimated[6] at 5.60 million tons - more than double the 1960 level of 2.55 million tons. If these emissions continue at recent growth rates (about 3% p.a.) they would reach nearly twice the current level by 2010, and three times that by 2025: both figures are well above the doomsday scenarios of current climate models. A doubling of the concentration of carbon in the atmosphere for example would involve an increase in "global warming" by 3°C. As the Worldwatch Institute states "it is a simple fact of atmospheric science that the planet will never be able to support a population of 8 billion people generating carbon emissions at the rate say of Western Europe today".[7] The significance of this is that it is impossible even to stabilize the world's population at a level of 8 billion by the year 2050 unless corrective action begins immediately on population policy, leaving alone the question of controlling carbon emissions.

Since the greater part of the gases which cause global warming originate in the industrial countries, it is the governments of these countries which have the primary responsibility for initiating effective remedial action by raising energy efficiency. The Worldwatch Institute[8] has estimated the additional expenditures needed for improving energy efficiency between 1990 and 2000 and the series is tabulated below:

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[6] Lester R. Brown et. al., *State of the World 1990*, Worldwatch Institute New York 1990, page 19 table 2-1.

[7] ibid, page 21.

[8] Lester R. Brown et. al. *State of the World 1988*, Worldwatch Institute New York 1988, page 183 table 10-5 "Rough Estimates of Additional Expenditures to Achieve Sustainable Development, 1990-2000. Subsequent sections of this paper draw extensively on the estimates made in this table which have the limitation of only providing global magnitudes. For the analytical purposes of the paper it is important to distinguish between expenditures to be made *in* - though not necessarily *borne by* - developing countries and those to be made in developed countries and the weights used derive from a private communication from Lester Brown on 30 July 1990, to whom I am most grateful.

TABLE 1.

Raising energy efficiency

Year	Total expenditures	Expenditures in developing countries	Expenditures in developed countries
		(billions of US$)	
1990	5	1	4
1991	10	2	8
1992	15	3	12
1993	20	4	16
1994	25	5	20
1995	30	6	24
1996	35	7	28
1997	40	8	32
1998	45	9	36
1999	50	10	40
2000	55	11	44

Total expenditures rise from US$5 billion in 1990 to US$55 in 2000 and are split between the developing and the developed countries in the ratio 20:80 corresponding to their relative shares in total energy consumption.

In contrast, the developing countries have the opportunity of investing in non-polluting renewable energy resources given their comparative advantage in having access to wind, solar and bio-mass energy. The Worldwatch Institute's projections for developing renewable energy resources are tabulated below:

TABLE 2.

Developing renewable energy

Year	Total expenditures	Expenditures in developing countries	Expenditures in developed countries
		(billions of US$)	
Year			
1990	2	1	1
1991	5	3	2
1992	8	4	4
1993	10	5	5
1994	12	6	6
1995	15	8	7
1996	18	9	9
1997	21	11	10
1998	24	12	12
1999	27	14	13
2000	30	15	15

Total expenditures during the decade rise from US$2 billion to US$30 billion and are split between the developing and the developed countries in the ratio 50:50.

Deforestation also concerns the economies of developing countries, perhaps more than those of the industrial nations. Destructive logging practices have already resulted in the loss of a large part of the tropical forests, thus reducing the forest's natural capacity to recycle carbon dioxide so as to release oxygen into the atmosphere. To this extent, nature's way of neutralising a gas contributing to global warming is weakened. The destruction of forests also entails the extinction of plant and animal species; if present trends continue, it is estimated that 7% of all plant species will probably be extinct by the year 2000.[9] Deforestation also has negative

[9] Norman Myers, "Threatened Biotas: 'Hotspots' in Tropical Forests", *The Environmentalist*, Vol.8, No.3, 1988.

effects on the agricultural ecosystem, such as increasing water run-off, leading to soil erosion and loss of soil nutrients, while enhancing the risk of floods.

Recent estimates, based on new interpretations of satellite data, reveal much higher rates of deforestation than those estimated several years ago. An estimate by the US Forest Service that the world is losing about 27 million acres of tropical forest each year has been superseded by a more recent study reported to the recent Houston Summit which estimates even higher losses in the range of 40 to 50 million acres a year. Individual country data indicate even more striking contrasts. In Brazil, for example, recent estimates indicate deforestation rates of 8 million ha./year (1985-88), as against only 2.5 million ha./year for the early 1980s, while deforestation rates in other tropical countries are also excessively high.

The recently concluded Houston Summit approved a proposal by President Bush to work towards an international forest convention in the light of data presented to them concerning the magnitude of damage to tropical forests. The decision envisaged a convention analogous to the Montreal protocol on CFCs to be concluded by 1992.

In this area as well the Worldwatch Institute has made estimates of the costs of reforesting the earth and these may be reasonably assigned entirely to the developing countries. They are presented below:

TABLE 3.

Reforesting the earth

Year	Total expenditures (billions of US$)
1990	2
1991	3
1992	4
1993	5
1994	6
1995	6
1996	6
1997	6
1998	7
1999	7
2000	7

The costs are considerably more modest than those involved in checking global warming, rising from US$2 billion in 1990 to US$7 billion in 2000.

Land Degradation: Soil erosion, increased rainfall run-off and floods are all forms of land degradation. In addition, air pollution, acid rain and increased ultraviolet radiation associated with ozone depletion have reduced yields of some crops, such as soyabeans, while waterlogging and salinity are lowering the productivity of one-quarter of the world's irrigated cropland. According to the Worldwatch Institute[10] the additional loss of world grain output each year as a result of land degradation amounts to some 12 million tons, with an extra 2 million tons loss resulting from crop damage (because of air pollution, flooding, acid rain and increased ultraviolet radiation). The total of 14 million tons - stated to be a 'crude estimate' - represents under 1% of world annual grain production, but none

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[10] Lester R. Brown et. al., *State of the World 1990* op. cit. page 64 table 4-3.

the less could constitute a critical loss in years of short crops, particularly in areas of severe land degradation.

The Worldwatch Institute's estimates of the costs of arresting land degradation are concerned with protecting top soil on cropland and are tabulated below.

TABLE 4.

Protecting topsoil on cropland

Year	Total expenditures	Expenditures in developing countries (billions of US$)	Expenditures in developed countries
Year			
1990	4	3	1
1991	9	6	3
1992	14	9	5
1993	18	12	6
1994	24	16	8
1995	24	16	8
1996	24	16	8
1997	24	16	8
1998	24	16	8
1999	24	16	8
2000	24	16	8

The total costs rise from a modest US$4 billion in 1990 to level off at US$24 billion in the middle of the decade extending to the year 2000, and are split between developing and developed countries in the ratio 66:33.

Population growth[11] compounds the effects of environmental degradation arising from rapid economic growth since fast population growth is a factor limiting efforts to reduce poverty levels in many developing countries. And it is now generally accepted that persistent poverty is an underlying cause of much of the environmental degradation in these countries e.g. desertification and the destruction of tropical forests in the search for wood fuel by the world's poor. I should perhaps mention in this context, that WIDER's most recent publication in its Hunger and Poverty Programme, a book by Jean Drèze and Amartya Sen entitled "Hunger and Public Action" and concerned with strategies for combating persistent poverty, has been described in a review by the Financial Times last Thursday 2 August as "one of the most important contributions to economic thought for many a year."[12]

The world's population in 1950 of 2.5 billion more than doubled again by 1990. To put it in another way, population growth in this brief forty year span was as much as the growth during the previous millions of years of human history. By the year 2025 - a mere 35 years hence - the United Nations projects the world's population at 8.5 billion. Of the projected increase of 3.2 billion in these 35 years, less than 200 million will occur in the developed countries, so that at least 3 billion will be added to the population of the developing countries.

Whatever action is taken to reduce population growth today will only yield visible results decades hence. The 8.5 billion population projection for 2025 assumes the current average growth of population to remain at 1.74% annually until the year 2000, declining thereafter to 0.98% in 2025. If on the other hand as a result of an

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[11] See Nathan Keyfitz, "The Growing Human Population", *Scientific American*, September 1989, on which this section is largely based. See also Jim McNeill "Strategies for Sustainable Economic Development", *Scientific American*, September 1989, which contains many helpful ideas.

[12] Jean Drèze and Amartya Sen, *Hunger and Public Action*, Oxford University Press, June 1990. *Financial Times*, 2 August 1990.

aggressive population policy, the growth rate were to decline more rapidly and reach 0.59% by 2025, the population 35 years hence will be 7.6 billion, reaching 8 billion in 2050.

Population policy obviously requires investments in family planning services and other incentives and these will have to occur in the developing countries. The Worldwatch Institute has once again estimated the costs for the decade 1990-2000 of stabilising the world's population at 8 billion by 2050 and these are tabulated below:

TABLE 5.

Slowing rates of population growth

Year	Total expenditure (billions of US$)
1990	13
1991	18
1992	22
1993	26
1994	28
1995	30
1996	31
1997	32
1998	32
1999	32
2000	33

The costs rise from US$13 billion in 1990 to US$33 billion in the year 2000.

The various costs of preventing environmental damage identified above become necessary if the world is to achieve sustainable development in the 21st century. They have been combined in the table below which presents separately the expenditures to be incurred in the developing countries and in the developed

countries. As already explained, while the developing countries have clearly to undertake the policy initiatives involved in expenditures to be made within their own boundaries, the financing could in principle come from the developed countries provided the evolving international situation creates the "room" for the necessary transfers to be made. It will of course be legitimate to assume that the developed countries will be in a position to finance whatever expenditures are to be incurred within their boundaries. What the table indicates is that expenditures in developing countries will need to rise from a total of US$20 billion in 1990 to US$82 billion in the year 2000, while the corresponding increases in developed countries are from US$6 billion in 1990 to US$67 billion in the year 2000. For the world as a whole, therefore, additional expenditures for sustainable development will need to rise from US$26 billion in 1990 to US$149 billion in the year 2000.

TABLE 6.

Rough Estimates of Additional Expenditures Required to Achieve Sustainable Development between 1990 and 2000

Expenditures in Developing Countries

Year	Raising Energy Efficiency	Developing Renewable Energy	Reforesting the Earth	Protecting Topsoil on Cropland	Slowing Population Growth	Total
			(billions of US$)			
1990	1	1	2	3	13	20
1991	2	2	3	6	18	31
1992	3	4	4	9	22	42
1993	4	5	5	12	26	52
1994	5	6	6	16	28	61
1995	6	7	6	16	30	65
1996	7	9	6	16	31	69
1997	8	10	6	16	32	72
1998	9	12	7	16	32	76
1999	10	13	7	16	32	78
2000	11	15	7	16	33	82
TOTAL						648

Expenditures in Developed Countries

Year	Raising Energy Efficiency	Developing Renewable Energy	Protecting Topsoil on Cropland	Total
		(billions of US$)		
1990	4	1	1	6
1991	8	3	3	14
1992	12	4	5	21
1993	16	5	6	27
1994	20	6	8	34
1995	24	8	8	40
1996	28	9	8	45
1997	32	11	8	51
1998	36	12	8	56
1999	40	14	8	62
2000	44	15	8	67
TOTAL				423

The remainder of this paper deals with ways of financing these additional expenditures but it should be remembered that the availability of finance is only a necessary and not a sufficient condition for implementing the kind of global transformation entailed in environmental preservation. The critical bottle-necks are in the areas of management and organisation. Even if a particular developing country wished to protect its forests and had the money for it, the attempt may fail for lack of the necessary bureaucratic, technical and political resources. In particular, adequate and effective decision making on environmental management may require a healthy dose of decentralisation as indeed argued in another area of WIDER research.[13]

I propose now to turn to the critical dimension of the world's economic problem requiring financing, namely that of pursuing a minimum socially necessary growth rate in the world economy to enable key aspirations to be met by the year 2000. As mentioned at the outset, it is important to remember that an adequate rate of growth in the developing countries presupposes a corresponding minimum rate of growth in the industrial countries. The argument I propose to develop is that the recycling of surpluses to developing countries will help maintain adequate rates of growth in the developed countries, by countering the deflationary bias of US adjustment. More specifically, in the current climate of détente, the savings released by the winding down of the US commitment to NATO and to Europe, will be adequate not only to look after the developing world's external resource requirements for "socially necessary" growth, but also to support the expenditures that need to be incurred in developing countries for "sustainable development"; and it is these expenditures which will help offset the deflationary impact of US

[13] Tariq Banuri and Frédérique Apffel Marglin eds., *Who Will Save the Forests?*, Oxford University Press, forthcoming.

adjustment. If additional measures of disarmament on a relatively modest scale were to be implemented in the US and elsewhere, this would suffice to finance the expenditures requiring to be incurred in the developed countries for sustainable development.

Growth has been sluggish in recent years in the developed countries because of their continuing preoccupation with the management of massive payments imbalances among themselves. These have reached the point when the growth process is in jeopardy unless these imbalances are adjusted. It is useful here to start with the twin deficits of the United States, by far the largest developed economy. In recent years both the US budget deficit and its external payments deficit have been in the region of US$150 billion. These deficits enabled the US to act for a considerable period as the locomotive of the world economy attracting the excess savings of the world's principal surplus economies, namely Japan and Germany. It is the increasing indebtedness of the US that has made this entire process vulnerable to a crisis of confidence in the dollar, with the prospect of a speculative outflow of dollars requiring a massive rise in US interest rates to staunch the outflow, thereby bringing US growth, and with it world growth, to a halt.[14]

As WIDER's World Economy Group argued in its first annual report for 1989 entitled *World Imbalances*[15] the basic cause of the US payments deficit lies in a deficiency in national savings for which no politically satisfactory solution has been found so far through attempts to balance the federal budget. Both tax increases and expenditure reductions have been found to be politically unfeasible, with the defence budget amounting to US$300 billion annually being treated as sacrosanct. It

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[14] See Stephen Marris *Deficits and the Dollar: The World Economy at Risk*, Washington DC 1985 for the detailed development of the argument summarised in this paragraph.

[15] O. Blanchard et. al. *World Imbalances: WIDER World Economy Group 1989 Report*, page 20, WIDER Helsinki 1989.

is precisely this magnitude which now, in today's climate of détente between the superpowers, turns out to be amenable to policy. Specifically, the US commitment to NATO turns out to be around half the US defence budget, and at US$150 billion is of the same order of magnitude as the US budget and payments deficits of recent years.[16] A substantial phasing out of the US commitment to Europe during the 1990s would yield corresponding reductions in both the US budget and payments deficits.

While this would, by itself, be a major step towards eliminating the current massive payments imbalances, it would also pose additional dangers to world economic growth if the deflationary impact of a reduced US payments deficit is not offset by demand expansion elsewhere. A turnaround in the US external deficit of US$150 billion, for example, is equivalent to about 6%[17] of the rest of the world's exports and a commensurate demand expansion is unlikely to occur in the developed surplus countries to any significant degree. Three limits to domestic expansion have been distinguished in these economies. First, having had track records of extremely low inflation, developed surplus economies have a concern that expansionary policies will only serve to re-ignite inflation. Second, they have a concern about increasing domestic public debt to uncomfortable levels. Third, they have legitimate concerns about the risks to steady economic growth involved in making too drastic a shift from a pattern of export-led growth to a pattern of domestic demand-led growth. For these three reasons taken together, it is widely held that domestic expansion in developed surplus economies will not proceed to the point of offsetting the deflationary impact of the required reduction in the US payments deficit.

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[16] See in this connection a remarkably prescient paper which anticipates the developments in Eastern Europe of 1989 by Sam Nakagama, "Mathematics of a Falling Dollar: $150 billion Budget Deficit, $150 billion Trade Deficit, $150 billion a year for NATO", *Paper presented to Nakagama & Wallace Pacific Basin Seminar*, New York, 29 June 1988.

[17] United Nations, *Monthly Bulletin of Statistics*, June 1990, page 252 Special Table E.

Recycling to the developing countries, and now of course to the reforming economies of Eastern Europe, accompanied by policy reforms for the productive absorption of surpluses released by disarmament, becomes imperative therefore if world activity is to be maintained at a sufficiently high level. This is the insight to which the Declaration adopted by the 18th Special Session of the UN on International Economic Co-operation, already cited, has given political recognition in the following words:-

> "In an increasingly interdependent world, the developing countries should play an important role in the stabilisation, growth and expansion of the world economy, for the progress and prosperity of all peoples."

The economic challenge of the 1990s then is how best recycling might be achieved so that the "peace dividend" of the US adjustment is reaped substantially by the developing countries and reforming Eastern European economies. What is involved is a re-switching of Japanese and German surpluses that would no longer be needed by the US economy to step up capital formation in those less developed parts of the world to which excess savings needs to be directed. If the US economy were indeed to adjust as expected, then the reduction in its claims on world savings would lower world interest rates and this would help redirect the excess savings of surplus economies against, as mentioned, a background of suitable policy reform in both the developing countries and Eastern Europe.

If a process of the kind described above were to unfold with the US economy returning to current account payments balance during the decade of the 1990s, then the foreign savings released annually by the US to flow elsewhere could be of the order of US$150 billion annually, taking as a benchmark the US deficits of the mid eighties. It is true that the US deficit narrowed in 1989 to a level of US$106 billion,

down by US$20 billion from the previous year, but the slack was taken up by expansion elsewhere, notably in Japan whose current account surplus fell to US$58 billion. Simultaneously however Germany's surplus rose by more than 14% to US$56 billion and approached that of Japan for the first time in recent history. The opportunity remains therefore for a substantial recycling to developing countries of the excess savings of surplus economies released by continuing US adjustment in the wake of détente.

The order of magnitude of resources available to flow to developing countries and eastern Europe can also be approached from the side of currently available and prospective surpluses, not only in Japan and Germany but elsewhere as well. WIDER's World Economy Group has argued[18] that "during 1986-88 Japan, together with Taiwan and Korea, ran a combined surplus of almost $120 billion per year in their trade accounts .... Unless policy adjustments are undertaken by both sides of the Pacific the current trend will continue for some years to come." On current forecasts, the surpluses for these three countries taken together are expected to remain in the $80-90 billion range looking as far ahead as 1993, despite a projected decline in Japan's trade surplus. If Germany's 1989 surplus and those in prospect are also taken account of, then the order of magnitude of prospective global surpluses also comes to around US$ 150 billion.

Against this background, it would be safe to posit a potential supply of foreign savings of the order of magnitude of US$100-150 billion through a phased programme of US adjustment in the 1990s, in the face of an increasing reluctance on the part of surplus economies to expand domestically. The potential demand, on the other hand, for additional foreign savings to support accelerated growth in

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[18] O. Blanchard et. al., op. cit., page 97.

developing countries has been determined in a WIDER study[19] at US$40 billion in 1990 rising to US$60 billion in the year 2000. More specifically, this estimate was derived from a sample of seventeen developing countries for each of which a "socially necessary" rate of growth was targeted for the decade 1990 to the year 2000. The concept of socially necessary growth quite deliberately ignored environmental considerations as a first approximation, and these were to be brought in at a subsequent stage in the analysis in aggregative fashion for the entire group of developing countries. Socially necessary growth in this sense was defined to include only three elements. First, socially necessary growth would seek to repair the damage done to basic needs goals in the "lost" decade of the 1980s by setting suitable targets in the areas of health, education, and poverty alleviation *etc.*, to be reached by the year 2000. Second, it would seek to reduce the prevailing backlog of unemployment to manageable levels also by the year 2000. A third goal was to bring about an improvement in income distribution in each country by then. For the seventeen countries studied, socially necessary growth meant an increase in the rate of growth of output capacity, that is potential output, by 1% over current trends. This would require an additional external capital inflow of US$ 16 billion in 1990. This 1% increase in the output capacity growth rate would be equivalent to a 2 percentage point increase in the GDP growth rate.

The WIDER study also pulled together the aggregative implications of the work for the developing world as a whole by extrapolating the findings of the sample. It is this extrapolation of a 1% faster capacity growth to all developing countries which requires, as already mentioned an additional external resource inflow of US$40 billion in 1990, rising to US$60 billion by the year 2000 if this rate of capacity growth is to be maintained throughout the decade. This growth in capacity turns out to be equivalent to a GDP growth rate over the decade 1990 to 2000,

[19] Lance Taylor, *Foreign Resource Flows and Developing Country Growth*, WIDER Research for Action, WIDER Helsinki 1990.

averaging 5.5% which would correspond in many cases to socially necessary growth in the sense of permitting minimum development goals to be achieved, although higher growth rates would be required in low-income countries. Of the initial amount of US$40 billion, sub-Saharan Africa would require US$7 billion, Asia (except the Middle East) US$18 billion, Europe, the Middle East and North Africa US$7 billion, and Latin America US$8 billion. If this amount of US$40 billion were to be forthcoming as Official Development Assistance (ODA) from the budgets of OECD countries, the task involved is that of doubling the present level of ODA from 0.35% of the OECD GNP to reach the internationally agreed target of 0.7%. It is not, in other words, inordinately ambitious. It is of significance in this connection that the South Commission has included in its Six Point Global Programme of Immediate Action the objective of "doubling the volume of concessional transfers of resources to developing countries by 1995".[20] This target date however, is almost certainly too late for achieving socially necessary growth *during* the decade of the 1990s as envisaged by WIDER.

The underlying country level calculations in the WIDER study incorporate domestic policy reform assumptions needed to absorb the external resources productively. Most importantly, the net capital inflow requirements allow for debt service payments comprising amortization and interest appropriate to each country, so that no separate additional provision needs to be made for handling the developing country debt problem in the manner envisaged by the Worldwatch Institute Report of 1988 already cited.[21]

This analysis of the requirements of socially necessary growth in the developing world has abstracted from the linkages with growth in the developed

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[20] South Commission, *The Challenge to the South: The Report of the South Commission*, Geneva 1990, page 269.

[21] Lester R. Brown, *State of the World 1988*, op. cit. page 183 table 10-5.

world, again as a first approximation. Since the World Bank's current projections for the year 2000[22] associate a 5.1% annual growth in developing countries with no more than a 3% growth in the developed countries, at around their historical trend, it is difficult to see how developing country growth can rise to 5.5% without a correspondingly faster rate of growth in developed countries, possibly in the range 3.5-4%. What can be asserted safely in this regard is that a more rapid rate of growth in the developed world would require increased investment within their boundaries which cannot be forthcoming unless it is supported by a significant increase in domestic savings rates. Since the excess savings of today's surplus economies will in terms of the subsequent argument of this paper be pre-empted by the claims of developing countries, then the remaining source of rapid growth in the developed countries must come from a further release of resources through disarmament. As will be argued below, the potential for this is substantial and will serve not only to look after the significant additional environmental expenditures needing to be made *in* the developed countries, but leave enough room for the substantial productive investment needed to raise developed country growth to the levels required to support socially necessary growth in the developing countries.

To summarise, therefore, the demand for foreign savings in support of socially necessary growth in developing countries in the 1990s in the range US$40-60 billion falls short of the potential supply of foreign savings in the range US$100-150 billion by an amount in the range US$60-90 billion. Assuming the US continues on the path of adjustment during the 1990s, what this means is that there will develop a deflationary bias in the world economy for which environmental expenditures *in* developing countries in pursuance of sustainable development on the scale US$60-90 billion would provide an adequate offset. As it happens, the range of expenditures *in* developing countries required for achieving environmental targets -

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[22] World Bank, *World Development Report 1990* op. cit., page 16.

US$20-82 billion over the decade - can be comfortably accommodated within the range US$60-90 billion. The relevant magnitudes are tabulated below:

TABLE 7.

Potential Demand for and Supply of Foreign Savings in Developing Countries 1990-2000

(US$ billions)

	Demand for Foreign Savings for:			Supply of Foreign Savings
	Socially Necessary Growth	Environmental Protection	Sustainable Development	
1990	40	20	60	100
2000	60	82	142	150

Given the extremely rough nature of these numbers, all one is entitled to say is that there is considerable room for optimism about the *feasibility* of the "peace dividend" of US disengagement from Europe being passed on to developing countries to support both socially necessary growth and sustainable development to the extent to which both these goals require expenditures to be made *in* developing countries. This would require no more than a reswitching of the surpluses that have so far financed the US deficit, *pari passu* with US adjustment. These costs will have, however, to be borne by the developed countries, but in global macro-economic terms the room will have been found through US adjustment. Indeed these expenditures may well turn out to be a kind of global Keynesian *deus ex machina* that would be necessary to maintain world effective demand and activity at a satisfactory level if adjustment proceeds at a sufficiently rapid pace in the US economy.

Only relatively subsidiary technical questions need arise as to how precisely the resource transfers are to be made if the *political will* to bring them about can be mobilized. This has pre-eminently been the case with the European Bank for Reconstruction and Development where the institution was set up with remarkable speed in the wake of last year's developments in Eastern Europe, with funding based upon a combination of relatively modest paid-in capital and substantial callable capital against the guarantees of participating governments. To the extent to which the potential supplies of foreign savings for the 1990s are in private markets and not in government budgets, broadly similar ways can be found of tapping these surpluses supplemented by the proceeds of international taxation *e.g.* on carbons. Indeed, it is difficult to see the 1992 United Nations Conference on Environment and Development coming to a triumphant conclusion, without the world community devising at least the nucleus of a financial mechanism credible enough to address the scale of the problem we have outlined.

As regards the expenditures to be incurred *within* developed countries in support of sustainable development, a different approach would clearly seem to be necessary. The elimination of the US current account deficit alone through disengagement from Europe will not obviously go far enough since, as argued above, the resources so released would no more than suffice to meet the developing world's needs for socially necessary growth and sustainable development.

That said, the order of magnitude of environmental expenditures in developed countries does not turn out to be excessively formidable. On the estimates put together above, these need to rise during the decade from US$6 billion in 1990 to US$67 billion in the year 2000. To this will have to be added areas of expenditure which have for lack of information not been estimated, such as the costs of combating CFC emissions in developed countries. Nevertheless the orders of magnitude we now have - US$6-67 billion - are well within the scope of savings

within the US defence budget alone outside its commitments to Europe. As mentioned, the US defence budget is US$300 billion of which only US$150 billion stems from its commitment to Europe, so that, even if the latter is phased out over a ten year period, the scope for further savings is substantial.

The problem of finding the resources for environmental expenditures in the developed countries as a whole turns out indeed to be trivial when set against the defence expenditures of the world as a whole, which have now reached an estimated $1 trillion[23]. This magnitude decomposes into US$446 billion for the NATO countries, US$360 billion for Warsaw Pact countries, and US$173 billion for the developing countries. As shares of the government budgets of these groupings they are respectively 15.6%, 36.5% and 19.2%. As shares of respective gross national products, defence expenditures are 4.9% for NATO, 10.8% for Warsaw Pact countries, and 5.1% for developing countries.

In particular, there is a substantial scope for savings in Warsaw Pact country military expenditures of US$360 billion which can be diverted to domestic investment obviating to that extent the need for resource transfers from developed countries to Eastern Europe. For many developing countries, high levels of military expenditures constitute a serious constraint on their efforts to restructure their economies for sustainable development. For this reason a recent report by an Expert Group on Africa's Commodity Problems appointed by the Secretary General of the United Nations[24] recommends *inter alia* that African governments "move quickly to reduce military expenditures from the current average of 10% of government expenditure to a maximum of 5%." Reduced levels of military spending in developing countries would both make it easier for them to meet targets for

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[23] World Bank, *World Development Report 1990*, op. cit., page 17 box 1.3 "World Military Expenditures in the 1990s".

[24] United Nations, *Africa's Commodity Problems: Towards a Solution*, June 1990, page 72 .

sustainable development and enhance their moral claim to transfers of foreign savings.

In the case of the developed countries, it is clear of course that there are a variety of domestic development priorities for the improvement of infrastructure etc. that will constitute a substantial claim on the resources that could be freed by disarmament, in addition to the investment requirements of accelerated developed country growth needed to pull up developing country growth to socially necessary levels. Once again, however, the orders of magnitude are such that it is difficult to see how meeting these other more directly developmental claims of today's generation, could conflict with the relatively modest scale of expenditures *in* the developed countries during the 1990s required to preserve the global environment and ensure sustainable development for the twenty-first century. For example, today's annual defence expenditures of NATO countries of US$466 billion are comfortably in excess of the *total* expenditures *in* developed countries required for sustainable development during the 1990s of US$423 billion, and completely overshadow the annual amounts which rise from US$6 billion in 1990 to US$67 billion in the year 2000.

Provided that suitable mechanisms of the kind outlined above are put in place to ensure the diversion of the flow of excess global savings to developing countries, the reduction in the US payments deficit is not likely to result in deflationary pressures arising in the world economy. The underlying issue would then become, not so much the adequacy of international resource flows, as whether the recipient countries have in place the kinds of domestic policy framework needed to absorb these resources productively. In my view, a viable approach here would be a 'System of Development Contracts' between individual countries and the donor community along the lines proposed last year by Mr. Thorvald Stoltenberg, then the Foreign

Minister of Norway (now UN High Commissioner for Refugees).[25] Minister Stoltenberg envisaged that each country would set for itself, what is in effect a minimum socially necessary GDP growth rate for the year 2000, having regard to its minimum development goals in areas such as basic needs, employment, and income distribution. It is at the operational country-specific level of formulating a Development Contract that one can move from socially necessary growth to sustainable development by incorporating an environmental dimension in the overall development plan.

The donor community would be required to agree, not only to the provision of aid on a long-term basis to underwrite a country's investment plan, but to make aid available *quite explicitly* for meeting basic needs goals. In other words, foreign savings would be committed to meeting some set of minimum "entitlements" to socially necessary consumption, in situations where enhanced domestic resource mobilisation through further belt-tightening and lowering already depressed consumption levels can be socially and politically explosive, against the background of the drastic adjustment efforts of the 1980s. The donor community would also be committed to providing some form of compensatory financing in the event that the export expectations underlying the plan, or a country's terms of trade, are undermined by developments outside the country's control - an application of the Supplementary Financing Scheme discussed within UNCTAD in the 1960s on the basis of a World Bank Staff study.

The donor community would, in other words, undertake to protect minimum basic needs "entitlements" as well as the entire external economic environment governing a country's development plan, both through longer-term assurances of

[25] Thorvald Stoltenberg, *Towards a World Development Strategy based on Growth, Sustainability and Solidarity: Policy Options for the 1990s*, Paper presented at OECD Development Centre 25th Anniversary Symposium, February 1989, Paris. The present paper is an attempt to interpret the proposal and an excerpt from the original is contained as Annexe A for purposes of comparison.

foreign aid, and through financing that would, in effect, protect over the longer-term the import requirements of both socially necessary growth and sustainable development.

For its part, the developing country would be expected to establish, and *undertake to continue to maintain*, a domestic policy framework that would effectively support its development programme. Since this cannot involve at the outset the curtailment of consumption levels which are, as mentioned, at an irreducible minimum after the set-backs of the 1980s, aid support for basic needs "entitlements" would substitute for conventional domestic resource mobilisation measures. Aid support for these purposes would be crucial for maintaining political and social stability in countries with stabilization programmes aimed at stopping hyperinflation, once a fiscal deficit is eliminated. The developing country's obligation would be limited to providing the necessary framework of incentives to expand production and not at the outset to mobilize additional domestic savings (except of course, when a fiscal deficit has to be eliminated to stop hyperinflation in the context of a stabilization programme). This would imply an appropriate exchange rate regime, an appropriate structure of relative prices and incentives for production in both private and public sectors, and the pursuit of sound monetary and fiscal policies required to contain inflationary pressures.

The country's domestic savings will then be required to expand only out of additional income, once income begins to grow in response to the policy package that will have been put in place as part of the developing country's side of the bargain in its Development Contract. Such a Contract would qualify for support from the IMF and World Bank to a degree that would vary with the particular circumstances of the country concerned. Since, as mentioned, it is at the level of formulating the Development Contract that the environmental dimension, including an aggressive population policy, will be built into a country's development plan, this

framework for cooperation between the donor community and the developing world would constitute a viable and, in my view, perhaps the only enduring basis for ensuring sustainable development for a 21st century world of 8 billion people.

Lal Jayawardena

Director

WIDER Helsinki, August 1990

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ANNEXE A

Extract from Minister Thorvald Stoltenberg's statement at the OECD Development Centre's 25th Anniversary Symposium, 6-8 February 1989, Paris.

A System of Development Contracts

The severe problems facing the poorer developing countries represents an important challenge to the international community. This is amply illustrated in the UN analysis of the world economy to the year 2000 which predicts a particularly strong deterioration in the relative incomes of the least developed countries.

The 1980s has been the decade of structural adjustment programmes in developing countries. These programmes were initially short-term in nature focusing on stabilization measures to improve the balance of payments situation. The burden of responsibility for programme success was put on the adjusting governments, even though the likelihood of adjustment success in many cases depends fundamentally on the trade and economic policies adopted in other countries. For this reason adjustment programmes should be replaced with more comprehensive "Development Contracts", which could be defined as a comprehensive instrument for the financing of a medium and long-term development plan prepared by the developing country itself (with outside technical support where appropriate)

Experience from adjustment programmes has taught both developing and industrialized countries that all parties involved must be committed to the "Development Contract" once it has been agreed upon. The recipient government as well as the other contracting parties must agree to follow the policy framework laid down as long as the exogenous assumptions about external economic forces do not necessitate revisions.

A feature of "Development Contracts" that distinguishes them from adjustment programmes is the commitments to be made by the participating donors and banks. This can be arranged in a number of ways. Participants would very often have to include the major industrialised countries, major developing countries, the Bretton Woods institutions and the appropriate international organizations within and outside the UN (UNCTAD, GATT, UNEP, UNIDO etc.).

One alternative is to prepare a financing package composed of IMF loans for balance of payments support, Development Bank loans for sectoral

adjustments support, bilateral grant elements for basic needs components, co-financing from a bilateral donor and export credits for the imports of special foreign products and capital goods and services required. Some of the financing should be quick disbursing, whereas others should require conventional project cycle reviews. Burden-sharing should be arranged on the basis of explicit assumptions about the roles to be played by the participating parties.

The institutional machinery could be an improvement of the present consultative groups and round tables. Arrangements would have to ensure a balanced and fair partnership and a central role for the developing countries in question. The overall coordination of the political and economic aspects of the system of the "Development Contract" should be carried out within the UN system. Such a comprehensive system must be based on larger and more predictable flows of concessional resources. In this connection the attainment of the 0.7% ODA-target for the donor community as a whole, is not only necessary but a minimum target for the 1990s.